

I Claim:

1. In combination with use in a system including a plurality of vehicles each responsive to an individual address and to a plurality of commands for providing individual operations of such vehicles in accordance with such commands,

a plurality of pads, each individual one of the pads including a plurality of switches for providing an address to select an individual one of the vehicles and for providing commands to such individual one of the vehicles for operating such individual one of the vehicles in accordance with such commands,

a central station responsive to the closure of the switches in each individual one of the pads for sending the address and the commands to the individual one of the vehicles,

there being an additional switch on each individual one of the pads with first and second states of operation, the additional switch in each individual one of the pads providing for the operation of the individual one of the vehicles by only such individual one of the pads and providing in the second state for the operation of the individual one of the vehicles by another one of the pads in addition to the individual one of the pads, and

means in the central station for providing for the operation of the vehicle by the individual one of the pads and the additional one of the pads when the additional switch in the individual one of the pads is in the second state.

2. In a combination as set forth in claim 1,

each of the pads including, in the plurality of switches, first switches for controlling the movements of the individual one of the vehicles and including, in the plurality of switches, second switches for controlling other operations of the vehicles than the movements of the vehicles,

means responsive in the central station to the operation of the first switches in the individual one of the pads for providing controlled movements of the individual one of the vehicles and responsive in the central station to the operation of the second switches in the individual one of the pads for providing controlled operations of the individual one of the vehicles other than the movements of such vehicle.

08797188-021197

*Subst
C17*

3. In a combination as set forth in claim 2,

means responsive in the central station to the operation of the additional one of the switches in the individual one of the pads in the second state and to the operation of the first switches in the individual one of the pads and the additional one of the pads for providing controlled movements of the individual one of the vehicles and responsive in the central station to the operation of the second switches in the individual one of the pads and the additional one of the pads for providing controlled operations of the individual one of the vehicles other than the movements of such vehicle.

4. In combination in a central station for use with a plurality of pads and a plurality of vehicles wherein each of the pads includes a plurality of switches for controlling the operation of an individual one of the vehicles,

first means responsive in the central station to the closure of first switches in the plurality in an individual one of the pads in a pattern for producing first signals providing an address identifying an individual one of the vehicles,

second means responsive in the central station to the closure of second switches in the plurality in the individual one of the pads for producing second signals providing for an operation of the individual one of the vehicles in accordance with such switch closures, and

third means responsive in the central station to the closure of a third switch in the plurality in the individual one of the pads for providing for an operation of the individual one of the vehicles by a second one of the pads simultaneously with the operation of the individual one of the vehicles by the individual one of the pads, and

fourth means in the central station for sending to the individual one of the vehicles the first signals providing the address identifying the individual one of the vehicles and the second signals providing commands for obtaining the operation of the vehicle in accordance with the pattern of closure of the second switches.

5. In a combination as set forth in claim 4,

the first means being responsive in the central station to the closure of first switches in a second one of the pads in the pattern for producing third signals providing an address identifying the individual one of the vehicles,

03707188-021197

Sub
C
Conte

5 the second means being responsive in the central station to the closure of second switches in the second one of the pads for producing fourth signals providing for the operation of the individual one of the vehicles in accordance with such switch closures,

10 the fourth means being operative in the central station to send to the individual one of the vehicles from the second one of the pads, simultaneously with the sending to the individual one of the vehicles from the individual one of the pads, the third signals providing the address identifying the individual one of the vehicles and the fourth signals providing commands for obtaining the operation of the vehicle in accordance with the pattern of closure of the second switches in the second one of the pads.

6. In combination for controlling the operation of an individual one of a plurality of vehicles,

5 a handheld pad including a first switch operable in a pattern providing an address of the individual one of the plurality of vehicles and including a plurality of switches individually operable in a pattern providing for operations of the individual one of the vehicles in accordance with the pattern of closures of such switches,

means in the handheld pad for providing a plurality of light indications each for an individual one of the vehicles in the plurality,

10 means in the handheld pad for providing first light indications for the vehicles in the plurality when such handheld pad has not provided an address for any of the vehicles in the plurality, and

means in the handheld pad for providing a second illumination for the individual one of the vehicles when the handheld pad provides the address for such individual one of the vehicles.

7. In a combination as set forth in claim 6,

there being a plurality of handheld pads,

each of the handheld pad including a switch sequentially operative to select successive ones of the vehicles in the plurality, and

08797188-021197

Sub C1 Cancelled

means responsive in the handheld pad to the sequential operations of the switch for skipping the selection by the handheld pad of a vehicle in the plurality which has previously been addressed by another one of the pads in the plurality.

10
8. In a combination as set forth in claim 6,

the first light indications constituting a sequential activation of the light indications in the plurality on a cyclic basis, and

first
means in the handheld pad for discontinuing the sequential activation of the light indications in the handheld pad and for providing a continuous activation of an individual one of the light indications in such pad when such pad is operated to address the vehicle represented by such individual one of the light indications.

5
9. In combination for operating a vehicle in accordance with addresses and commands provided by a pair of handheld pads and transmitted by a central station to the vehicle,

means in the vehicle for receiving the addresses and commands provided by the pads and transmitted by the central station,

means in the vehicle for identifying the received addresses as those of the vehicle,

means responsive in the vehicle to the identification of the addresses received from the pads as those of the vehicle for executing the received commands from the handheld pads when the received commands are complementary, and

10
means responsive in the vehicle to the identification of the received addresses as those of the vehicle for ignoring the received commands from the handheld pads when the received commands are contradictory.

10. In a combination as set forth in claim 9,

means responsive in the vehicle to the discontinuance of one of the pads in the plurality in addressing the vehicle for continuing the response of the vehicle to the addresses and commands from the other one of the pads in the pair.

087071881321107

11. In combination for use in a system including a plurality of vehicles each responsive to an individual address and to a plurality of commands for providing individual operations of such vehicle in accordance with such commands,

5 a plurality of pads each operative to provide an address for selecting an individual one of the vehicles and to provide commands to such individual one of the vehicles for operating such individual one of the vehicles in accordance with such commands,

a central station responsive to the address and the commands from each of the pads for sending the address and the commands from such pad to the vehicle selected by such pad to obtain an operation of such vehicle in accordance with such commands, and

means in the central station for obtaining the interrogation at each instant of only the pads in the plurality that are providing addresses and commands to obtain the operation of vehicles in the plurality.

12. In a combination as set forth in claim 11,

means in the central station for transmitting the addresses and commands from the interrogated pads to the vehicles in the plurality to obtain the operation, in accordance with such commands, of the vehicles addressed by the central station on the cyclic basis.

13. In a combination as set forth in claim 12,

5 each of the pads including a switch having first and second states of operation and operative in the first state to provide an operation of an individual one of the vehicles in the plurality only by such pad and operative in the second state to provide for the operation of such individual one of the vehicles simultaneously by such pad and another one of the pads.

14. In combination,

a plurality of operative members,

5 a plurality of pads, each individual one of the pads including first and second pluralities of switches each having first and second operative relationships, the first switches having the second operative relationship in a pattern providing an address to select an individual one of the operative members and the second switches having the second

Sub. C-2
10/20/60
08797188-021107

operative relationship in a pattern providing for a controlled operation of the individual one of the operative members,

10 a central station having first and second states of operation, the central station being responsive in the first state of operation of the central station to the individual pattern of the first switches in the second state of operation of the first switches for producing a plurality of signals representing the address of the individual one of the vehicles and being responsive in the first state of operation to the individual pattern of the second switches in the second state of operation of the second switches for producing a second plurality of signals providing
15 a first controlled operation of the individual one of the operative members,

the central station being responsive in the second state of operation of the central station to the individual pattern of the second switches in the second state of operation of the second switches for producing a third plurality of signals for providing a second controlled operation of the individual one of the operative members different from the first controlled operation of the individual one of the operative members.
20

15. In a combination as set forth in claim 14,
means for sending to the operative members the first and second pluralities of signals in the first state of operation of the central station and the first and third pluralities of signals in the second state of operation of the central station.

16. In combination,
a plurality of vehicles,
a plurality of pads, each individual one of the pads including a plurality of switches having open and closed states of operation for providing an address to select an individual one of the vehicles and for providing commands to such individual one of the vehicles for operating such individual one of the vehicles in accordance with such commands,
5

a central station responsive to the closure of the switches in each individual one of the pads for sending the commands to the individual one of the vehicles addressed by such individual one of the pads,

10 means in the vehicles for powering the vehicles to perform the commands sent to the vehicles by the central station,

08797188-021197

means in the central station for determining in each progressive particular period of time whether any of the pads has provided addresses and commands to any of the vehicles, and

15 means in the central station for providing commands to the vehicles to depower the vehicles when the central station has determined that none of the pads has provided addresses and commands to any of the vehicles in one of the progressive particular periods of time.

17. In a combination as set forth in claim 16,
means responsive in the vehicles to the addresses and commands from the central station for performing the commands addressed to such vehicles by the central station, and
means responsive in the vehicles to the depowering commands from the central station
5 for depowering such vehicles.

18. In combination,
a plurality of vehicles,
a plurality of pads, each individual one of the pads including a plurality of switches having open and closed states for providing an address to select an individual one of the
5 vehicles and for providing commands to such individual one of the vehicles for operating such individual one of the vehicles in accordance with such commands,

a central station responsive to the closure of the switches in such individual one of the pads for sending the commands to the individual one of the vehicles addressed by such individual one of the pads,

10 first means including a memory in the central station for storing in the memory the identity of the individual one of the vehicles last addressed by such individual one of the pads, and

15 second means in the central station for providing for the selection again by such individual one of the pads of the individual one of the vehicles stored in the memory for such individual one of the pads after such individual one of the pads has selected one of the vehicles other than the individual one of the vehicles or after the individual one of the pads

08797188-021197

See CB

has failed to provide a command to the individual one of the vehicles for a particular period of time.

19. In a combination as set forth in claim 18,
each of the pads including a switch having open and closed states and operable to the closed state on a repetitive basis for a particular number of times to select the individual one of the vehicles, each of the pads including additional switches having open and closed states and operable to the closed state to provide the commands for operating the individual one of the vehicles, and

the second means in the central station being responsive to the operation of any of the additional switches to the closed state, after such individual one of the pads has selected one of the vehicles other than the individual one of the vehicles or after the individual one of the pads has failed to provide a command to the individual one of the vehicles for a particular period of time, for providing for the selection again by such individual one of the pads of such individual one of the vehicles.

20. In combination for use with a central station and a plurality of vehicles for selecting and operating individual ones of the vehicles in accordance with addresses and commands provided by the central station,

a hand held pad,

a first switch in the pad, the first switch having open and closed states and operable on a repetitive basis to the closed state for a particular number of times to select an individual one of the vehicles to be addressed by the central station,

a plurality of additional switches in the pad, the additional switches having open and closed states and being operable to the closed state in a particular pattern to obtain the operation of the individual one of the vehicles in accordance with the pattern of closure of the additional switches,

a plurality of light indications in the pad, each of the light indications being associated with a different one of the vehicles in the plurality,

means for energizing the light indications in sequence on a cyclic basis before any closures of the first switch to select the individual one of the vehicles in the plurality, and

08797188-021197

10

5

10

15

Handwritten notes: "C3" and "Cortex" with arrows pointing to the text.

means for continuously energizing the individual one of the light indications associated with the individual one of the vehicles when the first switch in the pad has been operated to the closed state on the repetitive basis for the particular number of times to select the individual one of the vehicles to be addressed by the central station.

21. In a combination as set forth in claim 20,
the pad constituting a first pad,
there being a plurality of additional pads each having the same construction as the first pad, and

5 means for skipping the light indications in the first pad of the vehicles selected by the additional pads when the first switch in the first pad is operated to the closed state on the repetitive basis.

22. In a combination as set forth in claim 20,
means for sending to the central station a first plurality of binary indications representing the repetitive operation of the first switch in the pad to the closed state to provide an address by the central station for the individual one of the vehicles in the plurality and a
5 second plurality of binary indications representing the pattern of closure of the additional switches in the pad to provide the commands by the central station for operating the individual one of the vehicles.

23. In combination for use in a system including a plurality of vehicles each responsive to an individual address and to a plurality of commands for providing individual operations of vehicles in accordance with such commands,

5 a plurality of pads each operative to provide an address for selecting an individual one of the vehicles and to provide commands to such individual one of the vehicles for operating such individual one of the vehicles in accordance with such commands,

a central station connected to the pads,

03797188.021197

Handwritten signature and initials.

Sub C3 1072
first means in the central station for interrogating the pads to determine the address and the commands provided by such pads,

second means responsive in the central station to the interrogation provided by the first means in the central station concerning the address and the commands from each pad for sending the address and the commands from such pad to the vehicle addressed by such pad to obtain an operation of such vehicle in accordance with such commands,

the first means in the central station being operative to interrogate any additional pad connected to the central station, and

the second means being responsive in the central station to the interrogation provided on the cyclic basis by the first means in the central station concerning the address and the commands from the pads in the plurality and from the additional pad for sending signals representing the address and the commands from each such pad to the vehicle addressed by such pad to obtain an operation of such vehicle in accordance with such commands.

24. In a combination as set forth in claim 23,

third means in the central station for transmitting at each instant only the commands from the pads which are providing changes in commands at that instant.

25. In a combination as set forth in claim 23,

the first means being operative to eliminate any of the pads disconnected in the plurality from the central station.

26. In combination for use in a system including a plurality of vehicles each responsive to an individual address and to a plurality of commands for providing individual operations of vehicles in accordance with such commands,

a plurality of pads each operative to provide an address for selecting an individual one of the vehicles and to provide commands to such individual one of the vehicles for operating such individual one of the vehicles in accordance with such commands,

a central station connected to the pads,

first means in the central station for interrogating the pads to determine the address and the commands provided by such pads,

10 second means responsive in the central station to the interrogation provided by the first means in the central station concerning the address and the commands from each pad for sending signals representing the address and the commands from such pad to the vehicle addressed by such pad to obtain an operation of such vehicle in accordance with such commands,

15 the first means in the central station being operative to eliminate, from the interrogation, any of the pads disconnected in the plurality from the central station,

a. the second means being responsive in the central station to the interrogation provided by the first means in the central station concerning the address and the commands from the pads interrogated by the central station for sending the signals representing the address and the commands from each such pad to the vehicle addressed by such pad to obtain an operation of such vehicle in accordance with such commands.

27. In a combination as set forth in claim 26,

third means in the central station for transmitting at each instant only the commands from the pads which are providing changes in commands at that instant.

28. In combination for use in a system including a plurality of vehicles each responsive to an individual address and to a plurality of commands for providing individual operations of vehicles in accordance with such commands,

5 a plurality of pads each including a first switch having open and closed states and operative to provide an address to an individual one of the vehicles dependent upon the number of such switch closures and including a plurality of switches each having open and closed states and operative in the closed state to provide a particular operation of the individual one of the vehicles,

10 a central station responsive to the closures of the first switch in each of the pads for providing an address to an individual one of the vehicles dependent upon the number of such switch closures in such pad and responsive to the closures of the second switches in such pad for providing signals representing operations to be performed by such individual one of the vehicles, and

08797188-021197

Sub C₃ 15
means responsive in the central station to the closures of individual pairs of the second switches providing in each of the pads contradictory commands to the individual one of the vehicles for converting such contradictory commands to signals providing specialized commands different from the commands provided by the closure of the different ones of the second switches in such pad.

29. In a combination as set forth in claim 28,

means in the central station for providing at each instant only the commands from the pads which are providing changes in commands at that instant, and

means in the central station for sending the vehicles in the plurality the commands provided by the last mentioned means in the central station.

30. In combination for use with a plurality of hand held pads each manually operable to provide signals representing addresses and commands,

a central station responsive to the addresses and commands from the hand held pads for providing for each of the pads a first plurality of signals representing the address of an individual one of the vehicles and a second plurality of signals representing the commands for operating such individual one of the vehicles, the first and second pluralities of signals provided at the central station for each of the pads occurring at a particular rate selected in a particular range of rates,

the central station also providing a plurality of start signals at the particular rate,

a plurality of vehicles each having an individual address and each including first means responsive to the signals representing the individual address for such vehicle and responsive to the second signals providing the commands for such vehicle for operating such vehicle in accordance with such commands, and

means responsive in the vehicle to the start signals from the central station for determining the particular rate of occurrence of the start signals and for providing for the response of the first means in the vehicle, at the particular rate of occurrence of the start signals, to the signals representing the individual address of each vehicle and to the second signals providing the commands for such vehicle.

08797180-021197

31. In a combination as set forth in claim 30,

the central station including a smart port operable on the first and second signals for each pad for modifying such signals to produce, for the vehicle individual to each of the pads, commands different from the commands represented by the second signals for such pad.

32. In a combination as set forth in claim 30,

the central station being operative in a first mode to provide for the addressing of each individual one of the vehicles by only one of the pads in the plurality and being operative in a second mode to provide for the addressing of each individual one of the vehicles by two (2) of the pads in the plurality.

33. In combination,

a plurality of vehicles,

a plurality of hand held pads each including a first switch having open and closed states and operable in the closed state to select an individual one of the vehicles dependent upon the number of closures of the first switch and each including a plurality of second switches each having open and closed states, the second switches for each of the pads being operable in the closed state in a pattern providing an operation of the selected vehicle dependent upon such switch closures,

a central station,

first means in the central station for interrogating the pads in the plurality to determine the number of closures of the first switch and the pattern of closures of the second switches for each of the pads,

second means in the central station for providing, for each of the pads, a first plurality of signals providing an address dependent upon the number of closures of the first switch in such pad and a second plurality of signals providing commands dependent upon the pattern of closure of the second switches in such pad, the first and second signals for each of the pads occurring at a particular rate,

third means in the central station for providing a plurality of start signals at the particular rate,

Light
C4

08707188-021197
20TT20-88T20

20

fourth means responsive in each of the vehicles to the start signals at the particular rate for operating upon the first plurality of signals in each of the pads at the particular rate to identify the address individual to such vehicle and for operating upon the second plurality of signals at the particular rate to identify the commands related to the address individual to such vehicle, and

25

fifth means for operating each vehicle in accordance with the commands provided for such vehicle.

34. In a combination as set forth in claim 33,

sixth means associated in the central station with the fifth means for transmitting to the vehicles at each instant only the signals representing changes in commands from the pads at that instant.

35. In a combination as set forth in claim 33,

each of the pads including an additional switch having first and second states of operation and providing in the first state of operation for the addressing by such pad of one of the vehicles not addressed at that time by any of the other pads and providing in the second state of operation for the addressing of one of the vehicles addressed at that time by another one of the pads.

36. In combination for use with a plurality of vehicles,

a plurality of pads each operative to identify an individual one of the vehicles addressed by such pad and to provide a plurality of binary indications providing commands for operating the individual one of the vehicles identified by such address,

a central station,

first means operatively coupled in the central station to the pads in the plurality for providing packets of signals identifying for each pad the individual one of the vehicles addressed by such pad and the commands for operating the individual one of the vehicles, and

second means responsive in each vehicle to the same identity of the signals providing the commands in two (2) successive packets addressed to such vehicle for operating such vehicle in accordance with the pattern of the signals in such packets.

Sub
C4
Conty

08797188-021197

Sub C4 Concluded
5 37. In a combination as set forth in claim 36,
means in the central station for interrogating the pads on a cyclic basis to obtain binary indications from each of the pads, on the cyclic basis with the other pads, of the individual one of the vehicles addressed by such pad and the binary indications providing commands for operating the individual one of the vehicles.

Sub C4 Concluded
38. In a combination as set forth in claim 36,
means in the central station for transmitting at each instant only the binary indications from the pads which are providing changes in addresses or commands at that instant.

Sub C4 Concluded
5 39. In a combination as set forth in claim 38,
means in the central station for simultaneously interrogating the pads to obtain simultaneous binary indications from the pads of the individual ones of the vehicles addressed by such pads and the binary indications providing the commands for operating the individual ones of the vehicles.

40. In combination in a vehicle for moving the vehicle in accordance with commands which are provided by a handheld pad to control the movements of the vehicle and which are converted by a central station to commands addressed by the central station to the vehicle to obtain the movements of the vehicle,

5 a pair of left wheels in the vehicle, the left wheels being spaced from each other in a longitudinal direction,

a pair of right wheels in the vehicle, the right wheels having the same spacing in the vehicle in the longitudinal direction as the left wheels,

10 first means in the vehicle for receiving the commands addressed to the vehicle from the central station,

a first motor in the vehicle for moving the left wheels in the vehicle in the longitudinal direction,

a second motor in the vehicle for moving the right wheels in the vehicle in the longitudinal direction,

15 the commands addressed to the vehicle from the central station including first signals
for operating the first motor and second signals for operating the second motor,

20 second means responsive in the vehicle to the first and second signals received by the
vehicle from the central station for normally accelerating the first and second motors in
progressive increments to the speeds commanded by the central station to such motors for
movement of the vehicle in the longitudinal direction, and

25 third means responsive in the vehicle to the first and second signals received by the
vehicle from the central station for operating the first and second motors at the same speed
without any progressive increments in speed, for movement of the vehicle in the longitudinal
direction, when one of the motors has been previously operated at a different
speed than the other motor, the same speed constituting the higher of the speeds provided by
the first and second motors.

41. In a combination as recited in claim 40,

5 fourth means responsive in the vehicle to the first and second signals received by the
vehicle from the central station for converting the first and second signals to pulse width
modulations in progressive periods of time, the pulse width modulations for each of the first
and second motors at each instant being dependent upon the speed at which such motor is to
be operated at that instant,

the operation of the second and third means at each instant being dependent upon such
pulse width modulations at that instant and the duty cycles of such pulse width modulations
at that instant.

40 38
42. In a combination as set forth in claim 40,

5 fourth means responsive in the vehicle to the failure of the vehicle to receive the first
and second signals for a particular period of time for maintaining the same operation of the
first and second motors for such particular period of time as the operation of such motors
upon the last reception by the vehicle of the first and second signals from the central station.

43. In combination in a vehicle for moving the vehicle in accordance with commands
which are provided by a handheld pad to control the movements of the vehicle and which are

converted by a central station to commands addressed by the central station to the vehicle to obtain the movements of the vehicle,

5 a pair of left wheels in the vehicle, the left wheels being spaced from each other in a longitudinal direction,

a pair of right wheels in the vehicle, the right wheels having the same spacing in the longitudinal direction as the left wheels,

10 a first motor in the vehicle for moving the left wheels in the vehicle in the longitudinal direction,

a second motor in the vehicle for moving the right wheels in the vehicle in the longitudinal direction,

the commands addressed to the vehicle from the central station including first signals for operating the first motor and second signals for operating the second motor,

15 first means in the vehicle for receiving the commands addressed to the vehicle from the central station,

second means responsive in the vehicle to the first and second signals received by the vehicle from the central station for operating the first and second motors in accordance with such signals, and

20 third means responsive in the vehicle to the failure of the vehicle to receive the first and second signals for a particular period of time for maintaining the same operation of the first and second motors for such particular period of time as the operation of the motors upon the last reception by the vehicle of the first and second signals from the central station.

44. In a combination as set forth in Exhibit 43,

5 fourth means responsive in the vehicle to the first and second signals received by the vehicle from the central station for normally accelerating the first and second motors in progressive increments to the speeds commanded by the central station to such motors for movement of the vehicle in the longitudinal direction.

45. In a combination as set first in Exhibit 43,

fourth means responsive in the vehicle to the first and second signals received by the vehicle from the central station for operating the motor in accordance with such first and

08797188-021197

Sub
C6
5 second signals only when the receiver has received the same first and second signals from the central station a plurality of successive times.

46. In combination,
a plurality of hand held pads,
a plurality of vehicles,
each of the handheld pads providing first binary indications representing a selection
5 of an individual one of the vehicles and second binary indications representing individual operations to be provided by such vehicle,

03797488 024197
10 a central station responsive to the first and second binary indications from the different pads on a cyclic basis for producing for each of the pads first signals providing an individual address for the individual one of the vehicles selected by such pad and second signals providing commands for moving such vehicle in a particular direction and for operating such vehicle,

15 means responsive in each of the vehicles to the first signals addressing such vehicle from the central station and to the second signals from the central station for such vehicle for moving such vehicle and operating such vehicle in accordance with the commands provided by the central station to such vehicle, and

means operative in each of the vehicles for continuing to provide a movement of such vehicle for a particular period of time in accordance with the last commands addressed to such vehicle by the central station when the vehicle fails to receive any commands addressed to such vehicle during such particular period of time.

47. In a combination as set forth in claim 46,

means in each of the vehicles for providing for an operation of such vehicle in the inactive but powered state at the end of the particular period of time when such vehicle fails to receive any commands addressed to such vehicle during such particular period of time.

Sub
C6
Conrad

48. In a combination as set forth in claim 46,
means responsive in each of the vehicles to the commands addressed to the vehicle
relating to movements of the vehicle for accelerating the vehicle in progressive increments to
obtain such movements.

49. In combination,
a plurality of hand held pads,
a plurality of vehicles,
each of the handheld pads providing first binary indications representing a selection
of an individual one of the vehicles and second binary indications representing individual
operations to be provided by such vehicle,

a central station responsive to the first and second binary indications from the different
pads on a cyclic basis for producing for each of the pads first signals providing an individual
address for the individual one of the vehicles selected by such pad,

each of the vehicles including a pair of left wheels spaced from each other in a
longitudinal direction and a pair of right wheels spaced from each other in the longitudinal
direction and including a first motor for moving the left wheels and a second motor for
moving the right wheels,

the commands addressed to the vehicle from the central station including second
signals for operating the first motor and third signals for operating the second motor,

first means in each of the vehicles for receiving the first, second and third signals
addressed to such vehicle from the central station, ^{and}

second means responsive in each of the vehicles to the second and third signals
received by the vehicle from the central station for normally accelerating the first and second
motors in progressive increments to the speeds commanded by the central station to such
motors for movement of such vehicle in the longitudinal direction.

50. In a combination as recited in claim 49,
third means responsive in each of the vehicles to the second and third signals received
by such vehicle from the central station for movement of such vehicle in the longitudinal
direction for operating the first and second motors at the same speed, without any progressive

Sub
J3
Conrad

08797188-021197

5 increments in speed, when one of the motors in such vehicle has been previously operated at a different speed than the other motor in such vehicle, the same speed constituting the higher of the speeds provided by the first and second motors in such vehicle.

51. In a combination as set forth in claim 49,

means operative in each of the vehicles for continuing to operate the first and second motors for a particular period of time in accordance with the last ones of the second and third signals received by such vehicle from the central station when such vehicle fails to receive the second and third signals addressed to such vehicle during such particular period of time.

52. In combination,

a plurality of hand held pads,

a plurality of vehicles,

each of the hand held pads providing first binary indications representing a selection of an individual one of the vehicles and second binary indications representing individual operations to be provided by such vehicles,

a central station responsive to the first and second binary indications from the different pads on a cyclic basis for producing for each of the pads first signals providing an individual address for the individual one of the vehicles selected by such pad and second signals providing commands for moving such vehicle in a particular direction and for operating such vehicle,

first means in each of the vehicles for receiving the first and second signals from each of the pads,

second means responsive in each of the vehicles to the second signals addressed to such vehicle for determining whether successive ones of the second signals addressed to such vehicle on the cyclic basis are identical, and

third means in each of the vehicles for operating such vehicle in accordance with the second signals addressed to such vehicle when the second means in such vehicle determines that the successive ones of the second signals addressed to such vehicle on the cyclic basis are identical.

08797188-021197

53. In a combination as set forth in claim 52,

the third means in each of the vehicles being operative to operate such vehicle in accordance with the second signals addressed to such vehicle in the second of the successive ones of the second signals addressed to such vehicle on the cyclic basis when the second means in such vehicle determines that the successive ones of the second signals addressed to such vehicle on the cyclic basis are identical.

54. In a combination as set forth in claim 52,

the first and second signals for each of the vehicles being in the form of packets each having a first particular number of the first signals and a second particular number of the second signals,

fourth means for determining whether at least a particular percentage of the packets addressed to each of the vehicles has the first particular number of the first signals and the second particular number of the second signals in such packets during a particular period of time, and

fifth means for operating each of the vehicles in accordance with the second signals in the packets addressed to such vehicle when the fourth means in such vehicle determines that at least the particular percentage of the packets addressed to such vehicle has the first particular number of the first signals and the second particular number of the second signals in the packets during the particular period of time.

55. In combination,

a plurality of hand held pads,

a plurality of vehicles,

each of the hand held pads providing first binary indications representing a selection of an individual one of the vehicles and second binary indications representing individual operations to be provided by such vehicles,

a central station responsive to the first and second binary indications from the different pads on a cyclic basis for producing for each of the pads on the cyclic basis first signals providing an individual address for the individual one of the vehicles selected by such pad and

08797188-021197

Sub
C-17
Cont.

10 second signals providing commands for moving such vehicle in a particular direction and for operating such vehicle,

first means in each of the vehicles for receiving the first and second signals from each of the pads,

the first and second signals for each of the vehicles being in the form of packets each having a first particular number of the first signals and a second particular member of the second signals,

second means for determining whether at least a particular percentage of the packets addressed to each of the vehicles has the first particular number of the second signals in each packet during a particular period of time, and

20 third means for operating each of the vehicles in accordance with the second signals in the packets addressed to such vehicle when the fourth means in each vehicle determines that at least the particular percentage of the packets addressed to such vehicle has the second particular number of the second signals in the packets during the particular period of time.

56. In a combination as set forth in claim 55,
the central station being operative to interrogate each of the pads on the cyclic basis to determine the first and second binary indications from such pads, and

5 means in the central station for sending to the vehicles at each instant only the second binary indications representing changes in the commands from the pads at that instant.

57. In combination in a vehicle for use in a central station operative to receive, from a plurality of pads on a cyclic basis, first binary indications representing the address of the vehicle and second binary indications representing operations to be performed by the vehicle and operative to send first signals in accordance with the first binary indications and second signals in accordance with the second binary indications,

first means in the vehicle for receiving the first and second signals from the central station on the cyclic basis for each of the pads,

second means in the vehicle for determining whether successive ones of the second signals addressed to such vehicle on the cyclic basis are identical, and

00797188.021197

Sub
C7
C7
C7

10 third means in each of the vehicles for operating such vehicle in accordance with the
second signals addressed to such vehicle when the second means in such vehicle determines
that the successive ones of the second signals addressed to such vehicle on the cyclic basis
are identical.

58. In a combination as set forth in claim 57 wherein
the third means in each of the vehicles is operative to operate such vehicle in
accordance with the successive ones of the second signals addressed to such vehicle on the
cyclic basis when the second means in such vehicle determines that the successive ones of the
5 second signals addressed to such vehicle on the cyclic basis are identical.

59. In a combination as set forth in claim 58, including,
fourth means responsive to first ones of the second signals addressed to such vehicle
on the cyclic basis for moving the vehicle, and
fifth means responsive to second ones of the second signals addressed to such vehicle
5 on the cyclic basis for providing operations of the vehicle other than moving the vehicle.

60. In a combination as set forth in claim 59,
the first and second signals for the vehicle being in the form of packets each having
a first particular number of the first signals and a second particular number of the second
signals,

5 sixth means for determining whether at least a particular percentage of the packets
addressed to the vehicle has the second particular number of the second signals in such
packets during a particular period of time, and

10 seventh means for operating the vehicle in accordance with the second signals in the
packets addressed to such vehicle when the sixth means in such vehicle determines that at
least the particular percentage of the packets addressed to such vehicle has at least the second
particular number of the second signals in the packet, during the particular period of time.

61. In combination in a vehicle for use with a central station operative to receive,
from a plurality of pads on a cyclic basis, first binary indications representing the address of

Sub
C7
Contd

08707188-021197

Sub C7
amended
the vehicle and second binary indications representing operations to be performed by the vehicle and for sending first signals in accordance with the first binary indications and second signals in accordance with the second binary indications,

first means in the vehicle for receiving the first and second signals from the central station in representation of the binary indication from each of the pads,

the first and second signals for the vehicle being in the form of packets each having a first particular number of the first signals and a second particular number of the second signals,

10 second means in the vehicle for determining whether at least a particular percentage of the packets addressed to the vehicle has the second particular number of the second signals in such packets during a particular period of time, and

15 third means in the vehicle for operating the vehicle in accordance with the second signals in the packets addressed to such vehicle when the second means in such vehicle determines that at least the particular percentage of the packets addressed to such vehicle has the second particular number of the second signals in the packets during the particular period of time.

62. In a combination as set forth in claim 61,
the vehicle including wheels and motors for rotating the wheels and including at least one member movable on the vehicle to perform selective functions,

5 the third means being responsive in the vehicle to the second signals for rotating the wheels in the vehicle to obtain a movement of the vehicle in accordance with such wheel rotations and for moving the member to perform the selective functions.

Sub C8
63. In combination for use in a system including a central station and a plurality of vehicles and a plurality of pads each manually operable to provide first binary indications providing an address to an individual one of the vehicles and second binary indications providing commands for operating the individual one of the vehicles and each operable to provide the first and second binary indications to the central station for the transmission by the central station to the vehicles of the first and second binary indications from each of the pads,

a microcontroller in the central station,

a first line extending between the microcontroller and the pads in the plurality to provide an interrogation of such pads of the first and second binary indications from such pads,

a second plurality of lines each extending between the microcontroller and an individual one of the pads for providing clock signals to the individual one of the pads for controlling the time of the interrogation of such individual one of the pads by the central station, and

a plurality of third lines each extending between the microcontroller and an individual one of the pads for providing the first and second binary indications from the individual one of the pads to the central station in response to the interrogation by the central station to the individual one of the pads.

64. In a combination as set forth in claim 63,

the second lines introducing the clock signals in sequence to the different ones of the pads on a cyclic basis to obtain an interrogation of the pads by the central station when the pads receive the clock signals, and

the third lines providing the first and second binary indications from the pads to the central station when the pads are interrogated by the central station.

65. In a combination as set forth in claim 63,

the second lines introducing the clock signals simultaneously to the different ones of the pads to obtain a simultaneous interrogation of the different pads by the central station, and

the third lines providing the first and second binary indications from the pads when the pads are interrogated by the central station.

66. In a combination as set forth in claim 63.

the clock signals having first and second polarities,

the interrogation of the pads in the plurality by the central station occurring when the clock signals on the second lines have a particular one of the first and second polarities.

Sub
C
Contd.

5 67. In combination for use in a system including a central station and a plurality of vehicles and a plurality of pads each manually operable to provide first binary indications providing an address to an individual one of the vehicles and second binary indications providing commands for operating the individual one of the vehicles and each operable to provide the first and second binary indications to the central station for the transmission by the central station to the vehicles of the first and second binary indications from each of the pads,

10 a first line extending between the central station and the pads in the plurality to provide an interrogation of such pads of the first and second binary indications from such pads,

15 a second plurality of lines each extending between the central station and an individual one of the pads for providing clock signals to the individual one of the pads for controlling the time of the interrogation of such individual one of the pads by the central station, and

20 a plurality of third lines each extending between the central station and an individual one of the pads for providing the first and second binary indications from the individual one of the pads to the central station in response to the interrogation by the central station to the individual one of the pads,

25 the third lines also providing binary indications from the central station to each individual one of the pads in the plurality, after the provision of the first and second binary indications from such individual one of the pads to the central station, of the particular one of the vehicles addressed by each individual one of the pads.

68. In a combination as set forth in claim 67,

the second lines introducing the clock signals in sequence to the different ones of the pads on a cyclic basis to obtain an interrogation of the pads by the central station when the pads receive the clock signals, and

5 the third lines providing the first and second binary indications from the pads to the central station when the pads are interrogated by the central station,

each of the pads having a plurality of lights each indicating a different one of the vehicles, and

00797188-021497

Sub C 8
Contd
10th

means for illuminating a particular one of the lights on each of the pads in accordance with the particular one of the vehicles addressed by such pad.

69. In a combination as set forth in claim 67,
the second lines introducing the clock signals simultaneously to the different ones of the pads to obtain a simultaneous interrogation of the different pads by the central station, and
the third lines providing the first and second binary indications from the pads when
5 the pads are interrogated by the central station,

each of the pads having a plurality of lights each indicating a different one of the vehicles, and

means for illuminating a particular one of the lights on each of the pads in accordance with the particular one of the vehicles addressed by such pad.

70. In a combination as set forth in claim 63,
the clock signals having first and second polarities,
the interrogation of the pads in the plurality by the central station occurring when the clock signals on the second lines have a particular one of the first and second polarities,
5 the illumination of the particular one of the lights on each of the pads by the indications from the central station to such pad through the third line for such pad in representation of the particular one of the vehicles addressed by such pad occurring when the clock signals on the second lines have the other one of the first and second polarities.

71. In combination for use in a system including a central station and a plurality of vehicles and a plurality of pads each manually operable to provide first binary indications providing an address to an individual one of the vehicles and second binary indications providing commands for operating the individual one of the vehicles and each operable to
5 provide the first and second binary indications to the central station for the transmission by the central station to the vehicles of the first and second binary indications from each of the pads,

08797188-021497

Sub C8 Concluded

10 a first line extending between the central station and the pads in the plurality to provide an interrogation of such pads of the first and second binary indications from such pads,

a plurality of second lines each extending between the central station and an individual one of the pads for providing clock signals to the individual one of the pads for controlling the time of interrogation of the individual one of the pads by the central station, and

15 a plurality of third lines each providing an indication from the central station to the individual one of the pads of the vehicle addressed by such individual one of the pads.

72
72. In a combination as set forth in claim 71,

the clock signals having first and second polarities,

each of the third lines providing the first and second binary indications in an individual one of the pads to the central station in the first polarity of the clock signals and each providing an indication from the central station to the individual one of the pads, in the second polarity of the clock signals, of the vehicle addressed by such individual one of the pads.

Sub C9

73. In a combination as set forth in claim 72,

the second lines introducing the clock signals in sequence to the different ones of the pads on a cyclic basis to obtain an interrogation of the pads by the central station when the pads receive the clock signals, and

5 the third lines providing the first and second binary indications from the pads to the central station when the pads are interrogated by the central station.

74. In a combination as set forth in claim 73,

a plurality of lights in each of the pads, each of such lights providing an indication, when illuminated, of an individual one of the vehicles, and

5 means for illuminating an individual one of the lights in each of the pads in accordance with the indication from the central station to such pad of the vehicle addressed by such pad.

08707183-024197

5 75. In a combination as set forth in claim 72,
the second lines introducing the clock signals simultaneously to the different ones of
the pads to obtain a simultaneous interrogation of the different pads by the central station, and
the third lines providing the first and second binary indications from the pads when
the pads are interrogated by the central station.

5 76. In combination for use in a system including a central station and a plurality of
vehicles and a plurality of pads each manually operable to provide first binary indications
providing an address to an individual one of the vehicles and second binary indications
providing commands for operating the individual one of the vehicles and each operable to
provide the first and second binary indications to the central station for the transmission by
the central station to the vehicles of the first and second binary indications from each of the
pads,

10 a first line extending between the central station and the pads in the plurality to
provide an interrogation of such pads of the first and second binary indications from such
pads,

a plurality of second lines each extending between the central station and an individual
one of the pads for providing clock signals to the individual one of the pads for controlling
the time of the interrogation of such individual one of the pads by the central station, and

15 a plurality of third lines each extending between the central station and an individual
one of the pads for providing the first and second binary indications from the individual one
of the pads to the central station in response to the interrogation by the central station to the
individual one of the pads,

20 the extension of the third lines between the central station and the pads providing for
the decoupling of any one of the pads from the central station without affecting the provision
of the first and second binary indications from the other one of the pads to the central station.

77. In a combination as set forth in claim 76,
each of the third lines providing an indication from the central station to the individual
one of the pads of the vehicle addressed by such individual one of the pads,

08797188-021197

*Sub
C9
cont'd*

the extension of the third lines between the central station and the pads providing for the decoupling of any one of the pads from the central station without affecting the provision of the indications from the central station to the other pads of the vehicles addressed by such other ones of the pads.

78. In a combination as set forth in claim 76,

the extensions of the third lines between the central station and the pads providing for the extensions of additional third lines between additional pads and the central station to provide first and second binary indications from each of such additional pads to the central station in response to interrogations by the central station to the individual ones of such additional pads without affecting the provision of the first and second binary indications from the pads in the plurality to the central station.

79. In a combination as set forth in claim 77,

the extensions of the third lines between the central station and the pads providing for the extensions of additional third lines between additional pads and the central station to provide first and second binary indications from each of such additional pads to the central station in response to interrogations by the central station to the individual ones of such additional pads without affecting the provision of the first and second binary indications from the pads in the plurality to the central station and without affecting the provision of the indications from the central station to the pads in the plurality of the vehicles addressed by such pads in the plurality.

80. In combination for use in a system including a central station and a plurality of vehicles and a plurality of pads each manually operable to provide first binary indications providing an address to an individual one of the vehicles and second binary indications providing commands for operating the individual one of the vehicles and each operable to provide the first and second binary indications to the central station for the transmission by the central station to the vehicles of the first and second binary indications from each of the pads.

Sub
C-9
Encl'd
10
a first line extending between the central station and the pads in the plurality to provide an interrogation of such pads of the first and second binary indications from such pads,

a plurality of second lines each extending between the central station and an individual one of the pads for providing clock signals to the individual one of the pads for controlling the time of the interrogation of such individual one of the pads by the central station, and

15 a plurality of third lines each extending between the central station and an individual one of the pads for providing the first and second binary indications from the individual one of the pads to the central station in response to the interrogation by the central station to the individual one of the pads,

20 the extensions of the third lines between the central station and the pads providing for the extensions of additional third lines between additional pads and the central station to provide first and second binary indications from each of such additional pads to the central station in response to interrogations by the central station to the individual ones of such additional pads without affecting the provision of the first and second binary indications from the pads in the plurality to the central station.

81. In a combination as set forth in claim 80,

5 the extensions of the third lines between the central station and the pads providing for the extensions of additional third lines between additional pads and the central station to provide first and second binary indications from each of such additional pads to the central station in response to interrogations by the central station to the individual ones of such additional pads without affecting the provision of the first and second binary indications from the pads in the plurality to the central station, and without affecting the provision of the indications from the central station to the pads in the plurality of the vehicles addressed by such pads in the plurality.

Sub
C-10
82. In combination for use in a system including a central station and a plurality of vehicles and a pad manually operable to provide first binary indications providing an address to an individual one of the vehicles and second binary indications providing commands for operating the individual one of the vehicles and operable to provide the first and second

5 indications to the central station for the transmission by the central station to the vehicles of
the first and second binary indications from the pad,

a first line extending between the central station and the pad to provide an
interrogation of such pad of the first and second binary indications in such pad,

10 a second line extending between the central station and the pad for providing clock
signals to the individual one of the pads for controlling the time of the interrogation of such
pad by the central station,

a third line extending between the central station and the pad for providing the first
and second binary indications from the pad to the central station in response to the
interrogation by the central station to the pad,

15 first means for storing the first and second binary indications in the pad, and
second means associated with the second and third lines for providing a transfer of the
binary indications in the first means to the third line when an interrogation of such pad is
provided on the first line.

83. In a combination as set forth in claim 79 wherein
the first means stores the first and second binary indications in a parallel form and
the second means transfers the binary indications in the first means to the third means
in a serial form.

84. In a combination as set forth in claim 82 wherein
the first line provides a first voltage on the first line to provide an interrogation of the
first and second binary indications in such pad and wherein

5 the central station provides through the first line to the pad signals identifying the
vehicle selected by the pad and wherein

the central station provides such identifying signals to the pad during the time that a
second voltage different from the first voltage is on the first line.

08797188-02497

Sub
C-10
Conc'd

Sub Di

85. In a combination as set forth in claim 84,
the pad providing a plurality of lights each indicating, when illuminated, the addressing
of such vehicle by the pad and wherein
means are provided for illuminating a particular one of the lights in accordance with
the signals passing through the third line from the central station to the pad.

Sub Cn

86. In combination for use in a system including a central station and a plurality of
vehicles and a pad manually operable to provide first binary indications providing an address
to an individual one of the vehicles and second binary indications providing commands for
operating the individual one of the vehicles and operable to provide the first and second
binary indications to the central station for the transmission by the central station to the
vehicles of the first and second binary indications from the pad,

a first line extending between the central station and the pad and having a first voltage
at first particular times and having a second voltage at second particular times different from
the first particular times,

a second line extending between the central station and the pad to provide a transfer
of information between the central station and the pad,

first means for interrogating the pad to determine the pattern of the first and second
binary indications in the pad when the first line has the first voltage,

second means operative during the production of the first voltage on the first line for
passing the first and second binary indications in the pad to the central station for the
transmission of such first and second binary indications by the central station to the pad, and

third means operative during the production of the second voltage on the first line for
transmitting to the pad through the second line from the central station signals identifying an
individual one of the vehicles addressed by the first binary indications from the pad.

8.7

86

87. In a combination as set forth in claim 86,

there being in the pad a plurality of lights each indicating, when illuminated, an
individual one of the vehicles addressed by the pad, and

means responsive to the signals passing through the second line from the central station
to the pad during the production of the second voltage on the first line for illuminating the

light identifying the individual one of the vehicles addressed by the first binary indications from the pad.

88. In combination for use with a plurality of vehicles each having an individual address and each operable when receiving the individual address,

a central station,

a plurality of pads each manually operable to address an individual one of the vehicles and each providing commands to operate the individual one the vehicles,

each of the pads being connected to the central station for receiving power from the central station to provide first binary indications addressing the individual one of the vehicles and second binary indications providing commands for operating the vehicles,

first means in the central station for interrogating each of the pads, separately from the interrogations of the other pads, to determine the first and second binary indications from the pads,

second means in the pads for transmitting the first and second binary indications from the pads to the central station upon the interrogation of the pads by the central station,

third means in the central station for transmitting to the vehicles the first and second binary indications determined from each of the pads,

the central station and the pads being constructed to provide for a disconnection of any particular one of the pads from the central station,

the first means being operative to interrogate the other pads upon the disconnection of the particular one of the pads from the central station,

the second means in the pads being operative to transmit the first and second binary indications from the other pads to the central station upon the disconnection of the particular one of the pads from the central station,

the third means in the central station being operative to transmit the first and second binary indications from the other pads to the vehicles upon the disconnection of the particular one of the pads from the central station, and

fourth means responsive in the central station to the disconnection of the particular one of the pads from the central station for freeing the vehicle addressed by the particular one of the pads to receive from the central station first binary indications provided by any particular

Handwritten: Sub C12

08707198-021197

30

one of the other pads and representing the address of such vehicle and second binary indications provided by such particular one of the other pads and representing commands to such vehicle and to be operated in accordance with such second binary indications.

89. In a combination as set forth in claim 88,

the first means being operative to interrogate the pads in the plurality on a cyclic basis before the disconnection of the particular one of the pads from the central station and to interrogate the pads in the plurality, other than the particular one of the pads, on the cyclic basis after the disconnection of the particular one of the pads from the central station.

90. In a combination as set forth in claim 88,

the first means being operative to interrogate the pads in the plurality simultaneously before the disconnection of the particular one of the pads from the central station and to interrogate the pads in the plurality, other than the particular one of the pads, simultaneously after the disconnection of the particular one of the pads from the central station.

91. In a combination as set forth in claim 88,

fifth means in each of the pads for providing for an illuminated indication in such pad of the individual one of the vehicles addressed by such pad, and

sixth means in each of the pads for providing in such pad an illumination indicating the individual one of the vehicles addressed by such pad, and

seventh means in the central station for discontinuing the illumination of the individual one of the vehicles addressed by the particular one of the pads when the particular one of the pads is disconnected from the central station.

92. In combination for use with a plurality of vehicles each having an individual address and each operable when receiving the individual address,

a central station,

a plurality of pads each manually operable to address an individual one of the vehicles and each providing commands to operate the individual one of the vehicles,

5

03707188-021197

Sub
CA 18
contd

*Sub
C12
Cont'd*

each of the pads being connected to the central station for receiving power from the central station to provide first binary indications addressing the individual one of the vehicles and second binary indications providing commands for operating the individual one of the vehicles,

10 first means in the central station for interrogating each of the pads, separately from the interrogations of the other pads, to determine the first and second binary indications from such pad,

second means in the pads for transmitting the first and second binary indications from the pads to the central station upon the interrogation of the pads by the central station,

15 third means in the central station for transmitting to the vehicles the first and second binary indications determined from each of the pads,

the central station and the pads being constructed to provide for the connection of an additional pad to the central station,

20 the first means in the central station being operative to interrogate the pads in the plurality and the additional pad upon the connection of the additional pad to the central station,

the second means in the pads being operative to transmit the first and second binary indications from the pads in the plurality and the additional pad to the central station upon the connection of the additional pad to the central station, and

25 the third means in the central station being operative to transmit the first and second binary indications from the pads in the plurality and the additional pad to the vehicles in the plurality upon the connection of the additional pad to the central station.

93. In a combination as set forth in claim 92,

the first means being operative to interrogate the pads in the plurality on a cyclic basis before the connection of the additional pad to the central station and to interrogate the pads in the plurality and the additional pad on the cyclic basis after the connection of the additional pad to the central station.

5

00707188-021197

Sub
C12
cont'd

94. In a combination as set forth in claim 92,
the first means being operative to interrogate the pads in the plurality simultaneously
before the connection of the additional pad to the central station and to interrogate the pads
in the plurality and the additional pad
5 simultaneously after the connection of the additional pad to the central station.

95. In a combination as set forth in claim 92,
fourth means in each of the pads for providing for an illuminated indication in such
pad of the individual one of the vehicles addressed by such pad,
fifth means in the central station for providing in such pad an illumination indicating
5 the individual one of the vehicles addressed by such pad,
the fifth means in the central station being operative to continue the illumination of
the vehicles addressed by the pads in the plurality and to provide an illumination of the
vehicle addressed by the additional pad when the additional pad is connected to the central
station.

96. In a combination as set forth in claim 1,
the pads in the plurality being connected to the central station, and
means in the central station for discontinuing the operation of the vehicle by the
individual one of the pads when the additional one of the pads is disconnected from the
5 central station.

97. In a combination as set forth in claim 5,
the pads in the plurality being connected to the central station, and
means in the central station for providing for the operation of the vehicle by the
individual one of the pads when the second one of the pads is disconnected from the central
5 station.

98. In a combination as set forth in claim 66,
the central station providing indications, through the third line for each of the pads,
to such pad of the individual one of the vehicles selected by such pad, and

08707188-021197

Sub
C-2
Contd.

means in each of the pads for indicating the individual one of the vehicles selected by such pad in accordance with the indications provided by the central station to such pad through the third line for such pad.

99. In a combination as set forth in claim 75,
a plurality of lights in each of the pads, each of such lights providing an indication, when illuminated, of an individual one of the vehicles, and

means for illuminating an individual one of the lights in each of the pads in accordance with the indication from the central station to such pad of the vehicle addressed by such pad.

100. In combination for use with a plurality of vehicles,
a plurality of pads each operative to provide a first plurality of binary indications addressing an individual one of the vehicles and to provide a second plurality of binary indications providing commands to such individual one of the vehicles for operating such vehicle,

a central station,

first means in the central station for interrogating the pads to determine the first and second binary indications from such pads,

second means in the pads for transmitting the first and second binary indications from the pads to the central station, and

third means responsive in the central station to the identities of the first binary indications in successive transmissions of the first and second binary indications from each individual one of the pads to the central station for transmitting the first and second binary indications for such pad to the vehicles in the plurality.

101. In a combination as set forth in claim 100,
means in the central station for transmitting at each instant only the second binary indications from the pads which are providing changes in commands at that instant.

08707188-021197

Subst
C 12
Contd

102. In a combination as set forth in claim 100,
the first means in the central station being operative to interrogate the pads on a cyclic basis to obtain the binary indications from each of the pads, on the cyclic basis with the other pads, of the individual one of the vehicles addressed by such pad and the binary indications for providing commands for operating the individual one of the vehicles.

103. In a combination as set forth in claim 100,
the first means in the central station being operative to simultaneously interrogate the pads to obtain simultaneously from the pads the first binary indications the individual ones of the vehicles and the second binary indications providing the commands for operating the individual ones of the vehicles.

104. In combination for operating a vehicle in accordance with addresses and commands provided by a pair of handheld pads and transmitted by a central station to the vehicle,

first means in the vehicle for receiving the addresses and commands provided by the pads and transmitted by the central station,

second means in the vehicle for identifying the received addresses as those of the vehicle,

third means responsive in the central station to the identification of the addresses received from the pads as those of the vehicle for providing for an execution of the received commands by the vehicle in accordance with such commands when the identified commands are complementary, and

fourth means responsive in the central station to the identification of the addresses received from the pads as those of the vehicle for providing for an execution by the vehicle of commands different from the commands provided by the pads when the commands are contradictory.

08707188-024407

Sub
C 12
Cont'd

105. In a combination as set forth in claim 104,
fifth means responsive in the vehicle to the discontinuance of one of the pads in the plurality in addressing the vehicle for continuing the response of the vehicle to the addresses and commands from the other one of the pads in the pair.

106. In a combination as set forth in claim 23,
the first means being operative to interrogate the pads in the plurality and an additional pad on a cyclic basis,

5 the second means being responsive on the cyclic basis to the interrogation provided by the first means of the pads in the plurality and the additional pad sending the addresses and commands to the addressed vehicles to obtain an operation of such vehicles in accordance with such commands.

107. In a combination as provided in claim 26,
the first means being operative to interrogate the pads on a cyclic basis.

108. In combination for use in a system including a plurality of vehicles each responsive to an individual address and to a plurality of commands for providing individual operations of vehicles in accordance with such commands,

5 a plurality of pads each operative to provide an address for selecting an individual one of the vehicles and to provide commands to such individual one of the vehicles for operating such individual one of the vehicles in accordance with such commands,

a central station connected to the pads,

first means in the central station for interrogating the pads on a cyclic basis to determine the address and the commands provided by such pads,

10 second means responsive in the central station to the interrogation provided by the first means in the central station concerning the address and the commands from such pad for receiving the address and the commands from such pad and for transmitting the address and the commands from such pad to the vehicles in the plurality, and

007188-0219

third means responsive in the central station to any change in the address or commands from an individual one of the pads for transmitting the address and the commands from such pad to the vehicles in the plurality on a priority basis.

109. In a combination as set forth in claim 108 wherein the central station discontinues the interrogation of any pad which is disconnected from the central station.

110. In a combination as set forth in claim 108 wherein the central station transmits the address and commands from the individual one of the pads in the plurality to the vehicles in the plurality only when the central station has completed the transmission to the vehicles in the plurality of the address and commands of the pad whose address and commands the central station has been transmitting at the time that the central station receives the change in the address and the commands from the individual one of the pads in the plurality.

111. In combination for use in a system including a plurality of vehicles each responsive to an individual address and to a plurality of commands for providing individual operations of vehicles in accordance with such commands,

a plurality of pads each operative to provide an address for selecting an individual one of the vehicles and to provide commands to such individual one of the vehicles for operating such individual one of the vehicles in accordance with such commands,

a central station connected to the pads,

first means in the central station for interrogating the pads on a cyclic basis to determine the address and the commands provided by such pads,

second means responsive in the central station to the interrogation provided by the first means in the central station concerning the address and the commands from such pads for receiving the address and the commands from such pads and for transmitting the address and the commands from such pads to the vehicles in the plurality, and

third means responsive in the central station to the coupling of an individual one of the pads to the central station and to the reception by such central station of an address and

*Sub CP2
Amended*
commands from such individual one of the pads for transmitting such address and commands from such individual one of the pads on a priority basis.

*Sub
AC*
112. In a combination as set forth in claim 111 wherein the central station for transmitting to the vehicles at each instant only the commands from the pads which are providing changes in commands at that instant.

*Sub
J8
Amended*
5 113. In a combination as set forth in claim 111 wherein the central station transmits the address and commands from the individual one of the stations in the plurality to the vehicles in the plurality only when the central station has completed the transmission to the vehicles in the plurality of the address and commands of the pad whose address and commands the central station has been transmitting at the time that the central station receives the address and the commands from the individual one of the pads in the plurality.

40907166-024197
5 114. In combination for use in a system including a plurality of vehicles each responsive in a first relationship to an individual address and to a plurality of commands for providing operations of such individual one of the vehicles in accordance with such commands, the system including, in a second relationship, at least one auxiliary accessory for receiving commands,

6 a plurality of pads each operative to provide an address for selecting an individual one of the vehicles and to provide commands to such individual one of the vehicles for operating such individual one of the vehicles in accordance with such commands and each operative to provide an additional command indicating whether or not the individual one of the vehicles or the auxiliary accessory is to be operated,

10 a central station connected to the pads,

first means in the central station for interrogating the pads to determine the address and the commands and the additional command provided by such pads,

15 second means in the central station for receiving the address and the commands and the additional command from each of the pads,

a smart port in the central station for receiving commands intended by the pads to be directed to the auxiliary accessory,

third means responsive in the central station to the additional command from the pads for determining from the additional command whether or not the commands from the pads are intended for the vehicles or for the auxiliary accessory,

fourth means in the central station for directing the commands from the pads to the smart port when the central station determines from the additional command that the commands are intended by the pads for the additional accessory, and

fifth means in the central station for processing the address and commands in a first relationship to provide a first pattern of binary indications when the central station determines from the additional command from the pads that the commands from the pads are not to be directed to the smart port and for processing the commands in a second relationship different from the first relationship to provide a second pattern of binary indications when the central station determines from the additional command from the pads that the commands are to be directed to the smart port, and

sixth means in the central station for transmitting the first and second patterns of the binary indications.

115. In a combination as set forth in claim 114,

a first microcontroller,

a second microcontroller,

the fifth means including the first microcontroller for processing the address and the commands in the first relationship to provide the first pattern of binary indications when the central station determines from the additional command from the pads that the commands from the pads are not to be directed to the smart port,

the fifth means including the second microcontroller for providing the commands in the second relationship to provide the second pattern of the binary indications when the central station determines from the additional command from the pads that the commands are to be directed to the smart port.

116. In combination,

08707159-021197

03797188-021197

a plurality of vehicles,
an auxiliary accessory different from the vehicles,
a pad operative to provide an address for selecting an individual one of the vehicles
5 and to provide commands to such individual one of the vehicles for operating such individual
one of the vehicles in accordance with such commands and to provide an additional command
indicating whether or not such individual one of the vehicles is to be operated or the auxiliary
accessory is to be operated,
a central station connected to the pad,
10 first means in the central station for receiving the address and the commands and the
additional command from the pad,
a smart port in the central station for receiving the commands intended to be directed
to the auxiliary accessory,
second means responsive in the central station to the additional command from the pad
15 for determining from such additional command whether or not the commands from the pad
are intended for the vehicle or for the auxiliary accessory,
third means in the central station for directing the commands from the pad to the smart
port when the central station determines from the additional command that the commands are
intended for the additional accessory,
20 fourth means in the central station for processing the address and commands in a first
relationship to provide a first pattern of binary indications when the central station determines
from the additional command in the pad that the commands from the pad are not to be
directed to the smart port and for processing the commands in a second relationship different
from the first relationship to provide a second pattern of binary indications when the central
25 station determines from the additional command in the pad that the commands are to be
directed to the smart port,
fifth means in the central station for transmitting the first and second patterns of the
binary indications to the vehicle and the auxiliary accessory,
sixth means in the individual one of the vehicles for operating the vehicle in
30 accordance with the first pattern of the binary indications, and
seventh means in the auxiliary accessory for operating the auxiliary accessory in
accordance with the second pattern of the binary indications.

117. In a combination as set forth in claim 116,

a first microcontroller,

a second microcontroller,

the fourth means including the first microcontroller for processing the address and the
5 commands in the first relationship to provide the first pattern of binary indications when the
central station determines that the commands from the pads are not to be directed to the smart
port,

the fourth means including the second microcontroller for providing the commands in
the second relationship to provide the second pattern of the binary indications when the
10 central station determines that the commands are to be directed to the smart port.

118. In a combination as set forth in claim 116 wherein

the central station is a first central station and the plurality of pads constitute a first
plurality and the plurality of vehicles constitute a first plurality and wherein

the auxiliary accessory is a second central station and wherein a second plurality of
5 pads and a second plurality of vehicles are associated with the second central station and
wherein the binary indications in the second pattern direct the second central station to be a
slave to the first central station.

119. In combination for use in a system including a plurality of vehicles each
responsive, in a first relationship, to an individual address and to a plurality of commands for
providing operations of such individual one of the vehicles in accordance with such
commands, the system including, in a second relationship, at least one auxiliary accessory for
5 receiving commands,

a plurality of pads each operative to provide an address for selecting an individual one
of the vehicles and each operative to provide a plurality of commands for operating such
individual one of the vehicles in accordance with such commands,

a central station connected to the pads,

10 a smart port constructed to be connected to the central station,

03797108-021197

first means in the central station for interrogating the pads to determine if the smart port is connected to the central station,

second means in the central station for passing the commands from the pads through the smart port when the central station determines that the smart port is connected to the central station,

third means associated with the central station for processing the commands from the pads in a particular relationship, when the central station determines that the smart port is connected to the central station, to provide commands for operating the auxiliary accessory, and

fourth means in the central station for transmitting the commands in the particular relationship when the smart port is connected to the central station.

120. In a combination as set forth in claim 119,

the particular relationship constituting a first particular relationship,

means in the central station for processing the commands from the pads in a second particular relationship different from the first particular relationships, when the central station determines that the smart port is not connected to the central station, to provide commands for operating the individual one of the vehicles,

the fourth means in the central station being operative to transmit the commands in the second particular relationship when the smart port is not connected to the central station.

121. In a combination as set forth in claim 120 wherein

the central station is a first central station and the plurality of the pads constitute a first plurality and the plurality of the vehicles constitute a first plurality and wherein the auxiliary accessory is a second central station and wherein a second plurality of pads and a second plurality of vehicles are associated with the second central station and wherein the binary indications in the first particular pattern direct the second central station to be a slave to the first central station.

08707188-021197

Sub C 14
122. In combination for use in a system including a plurality of vehicles each responsive to an individual address and to a plurality of commands for providing individual operations of the vehicles in accordance with such commands,

5 a plurality of pads each operative to provide an address for selecting an individual one of the vehicles and to provide commands to such individual one of the vehicles for operating such individual one of the vehicles in accordance with such commands,

a central station connected to the pads,

first means in the central station for interrogating the pads to determine the address and the commands provided by such pads,

10 second means responsive in the pads to the interrogation by the central station for transmitting the address and the commands from the pads to the central station,

third means in the central station for receiving the addresses and the commands transmitted by the pads, and

15 fourth means in the central station for transmitting to the vehicles in the plurality only the commands transmitted from each pad to the central station that are different from the immediately preceding commands transmitted from such pad to the central station.

123. In a combination as set forth in the claim 122,

the first means in the central station being operative to interrogate the pads on a cyclic basis and the pads being operative to transmit the address and the commands from such pads to the central station when interrogated.

124. In combination for use in a system including a plurality of vehicles each responsive to an individual address and to a plurality of commands for providing individual operations of the vehicles in accordance with such commands,

5 a plurality of pads each operative to provide an address for selecting an individual one of the vehicles and to provide commands to such individual one of the vehicles for operating such individual one of the vehicles in accordance with such commands,

a central station connected to the pads,

08707188-021197

Sub
C14
cont'd

10 a plurality of first switches each included in an individual one of the pads and having first and second modes, of operation and operative in the first mode a successive number of times to address an individual one of the vehicles,

each of the pads including a plurality of lights each indicating an individual one of the vehicles when illuminated,

first means in the central station for remembering at each instant the individual ones of the vehicles being addressed by the pads at that instant,

15 a plurality of second switches each having first and second operative relationships and each disposed in an individual one of the pads and each operative in the first relationship to provide for the selection of only one of the vehicles by such individual one of the pads and operative in the second relationship to provide for the address by any other one of the pads of the same vehicle addressed by such individual one of the pads,

20 second means responsive in each of the pads to the operation of the first means in the central station and to the operation of the second switch in such pad in the first relationship for skipping over the lights representing in such pad the vehicles being addressed by the pads when the first switch in such pad receives successive actuations to the first mode of operation, and

25 third means responsive, in the other one of the pads to the operation of the first means in the central station and to the operation of the second switch in the individual one of the pads in the second relationship, for including in the sequence of lights in such other one of the pads the light in the vehicle addressed by such individual one of the pads in the second mode of operation of the second switch in such individual one of the pads.

125. In a combination as set forth in claim 124,

5 means in the central station for transmitting the address and commands from the individual one of the pads and such other one of the pads to the vehicle addressed by such individual one of the pads when the second switch in such individual one of the pads is in the second mode of operation.

126. In combination,

a plurality of vehicles each having an individual address,

03707188-02497

*Subst
C 14
Amended*

a plurality of pads each operative to provide an address for selecting an individual one of the vehicles and to provide commands to such individual one of the vehicles for operating such individual one of the vehicles in accordance with such commands,

a central station connected to the pads,

each of the pads being operative to transmit the address and the commands from such pad to the central station for transmission by the central station to the vehicles,

each individual one of the vehicles having a light for illumination when such vehicle is addressed and commanded by the central station as a result of the address and commands from an individual one of the pads,

first means in the central station for storing the addressing by each individual one of the pads of the individual one of the vehicles,

second means in the central station for communicating to the individual one of the vehicles to extinguish the light in such vehicle when the individual one of the pads providing the address and the commands to such individual one of the vehicles becomes disconnected from the central station, and

third means in each individual one of the vehicles for extinguishing the light in such individual one of the vehicles in accordance with the communication from the central station.

127. In a combination as set forth in claim 126,

fourth means in the central station for eliminating the storage of the addressing by each individual one of the pads of the individual one of the vehicles when such individual one of the pads becomes disconnected from the central station.

128. In a combination as set forth in claim 127,

fifth means in the central station for interrogating on a cyclic basis the pads connected to the central station to determine the address and the commands from such pad to the vehicles,

sixth means for receiving the address and the commands from each of the pads upon the interrogation of such pad by the central station, and

seventh means in the central station for eliminating one of the pads from the cyclic interrogation when such pad becomes disconnected from the central station.

08797188-021197

129. In combination for use in a system including a plurality of vehicles each responsive in a first relationship to an individual address and to a plurality of commands for providing operations of such individual one of the vehicles in accordance with such commands, the system including, in a second relationship, at least one auxiliary mechanism for receiving commands,

a central station,

a port in the central station, the port being either a smart port or a dumb port, the port being connectible to the auxiliary accessory,

first means in the central station for determining whether the port is a smart port or a dumb port,

a plurality of pads each operative to provide an address for selecting an individual one of the vehicles and to provide commands to such individual one of the vehicles for operating such individual one of the vehicles in accordance with such commands and each providing commands to operate the auxiliary accessory when the port is a dumb port,

the central station being connected to the pads,

second means in the central station for processing the addresses and commands from the pads to obtain an operation of the vehicles in accordance with such addresses and commands,

third means in the central station for operating the auxiliary accessory in accordance with the commands from the pad when the central station determines that the port is a dumb port, and

fourth means for converting the commands from the pads to commands for operating the auxiliary accessory when the central station determines that the port is a smart port.

130. In a combination as set forth in claim 130,

fifth means in the central station for transmitting the address and the commands from the second means when the central station determines that the port is a dumb port and for transmitting the commands from the fourth means for operating the auxiliary accessory when the central station determines that the port is a smart port.

131. In a combination as set forth in claim 129,
the second means including a first microcontroller and the fourth means including a
second microcontroller different from the first microcontroller.

132. In combination for use in a system including a plurality of vehicles each
responsive in a first relationship to an individual address and to a plurality of commands for
providing operations of such individual one of the vehicles in accordance with such
commands, the system including, in a second relationship, at least one auxiliary mechanism
for receiving commands,

a central station including a first microcontroller,

a plurality of pads each operative to provide an address for selecting an individual one
of the vehicles and to provide commands to such individual one of the vehicles for operating
such individual one of the vehicles in accordance with such commands and each providing
commands to obtain the operation of the auxiliary mechanism,

a second microcontroller,

first means in the central station for processing the commands from the pads for
determining whether such commands are intended for the vehicles or the auxiliary accessory,

second means in the central station including the first microcontroller for processing
the address and commands for operation of the vehicles when the central station determines
that the commands are intended for the vehicles and for introducing the addresses and
commands to the second microcontroller when the central station determines that the addresses
and commands from the pads are intended for the auxiliary accessory, and

third means including the second microcontroller for processing the addresses and
commands from the central station to provide commands for operating the auxiliary accessory
when the central station determines that the addresses and commands from the pads are
intended for the auxiliary accessory.

133. In a combination as set forth in claim 132,
means in the central station for transmitting the processed addresses and commands
from the first microcontroller when the central station determines that the addresses and
commands from the pads are intended for the vehicles and for transmitting the commands

08797188-02197

5 from the third means when the central station determines that the addresses and commands from the pads are intended for the auxiliary apparatus.

134. In a combination as set forth in claim 132,

the first microcontroller being operative to pass the commands from the pads to the second microcontroller when the central station determines that the commands are intended for the auxiliary accessory,

5 the second microcontroller being operative to receive and process the commands from the first microcontroller simultaneously with the passage of the commands from the first microcontroller to the second microcontroller and to pass the processed commands from the second microcontroller to the first microcontroller during the passage of the commands from the first microcontroller to the second microcontroller.

135. In a combination as set forth in claim 132,

the first microcontroller being operating to pass successive groups of commands to the second microcontroller when the central station determines that the commands are intended for the auxiliary accessory,

5 the second microcontroller being operative to receive and process the commands from the first microcontroller simultaneously with the passage of commands from the first microcontroller to the second microcontroller,

10 the first microcontroller being responsive to the passage of the processed commands in each group from the second microcontroller to the second microcontroller for passing the commands in the next one of the successive groups from the first microcontroller to the second microcontroller for processing by the second microcontroller.

136. In combination for use with a central station and a plurality of pads operatively coupled to the central station and each operative to provide an address, and commands following such address, to the central station for transmission by the central station,

5 a plurality of vehicles each constructed to receive the addresses and commands transmitted by the central station from the pads and to respond to an individual one of the

08707188-021197

addresses from the central station and to operate in accordance with the commands following such individual one of the addresses,

first means in each of the vehicles for powering such vehicle for operation in accordance with the reception by such vehicle from the central station of the address individual to such vehicle and the commands following such address,

second means in each of the vehicles for depowering such vehicle when such vehicle fails to receive from the central station for a particular period of time the address individual to such vehicle or the commands following such address,

third means in each of the vehicles for determining the time since the last reception of a command from the central station to such vehicle, and

fourth means in each of the vehicles for providing a first indication with such vehicle in the powered state, a second indication different from the first indication with the vehicle in the depowered state and a third indication different from the first and second indications for a particular period of time before such vehicle becomes depowered.

137. In a combination as set forth in claim 136 wherein

the fourth means in each of the vehicles includes a light having a first state of illumination with such vehicle in the powered state, a second state of illumination with such vehicle in the depowered state and a third state of illumination for the particular period of time before such vehicle becomes depowered.

138. In combination,

a plurality of vehicles each responsive to an individual addresses for operation in accordance with commands provided to such vehicle, a plurality of pads each operative to provide the address individual to such vehicles and to provide commands for operating such vehicles,

a central station operatively coupled to the pads for transmitting the addresses and commands from the pads to the vehicles,

first means in each of the vehicles for powering such vehicle in accordance with the address and commands provided by the central station to such vehicle,

08707188-021197

10 second means in the central station for determining the period of time since the last time that each of the vehicles has received commands from the central station,

third means in the central station for transmitting a first signal to each vehicle to depower such vehicle when the central station fails to transmit any commands to such vehicle for a particular period of time,

15 fourth means in the central station for transmitting a second signal to each vehicle a particular period of time before such vehicle becomes depowered,

fifth means in each of the vehicles for providing a first indication when such vehicle is being powered,

20 sixth means in each of the vehicles for providing a second indication when such vehicle is depowered, and

seventh means in each of the vehicles for providing a third indication during the particular period of time before such vehicle is depowered.

139. In a combination as set forth in claim 138,

means in each of the vehicle for activating such vehicle upon the reception by such vehicle from the central station of the address individual to such vehicle and for operating the vehicle in accordance with the commands following such individual address.

140. In a combination as set forth in claim 139,

each of the vehicles having a light,

the sixth means in each of the vehicles being operative to provide a first state of illumination of the light in such vehicle,

5 the seventh means in each of the vehicles being operative to provide a second state of illumination of the light in such vehicle,

the eighth means in each of the vehicles being operative to provide a third state of illumination of the light in such vehicle.

03707188.021197

141. In a combination as set forth in claim 139,

sixth means in each of the vehicles for determining the period of time since the last reception by such vehicle of commands addressed to such vehicle and for depowering such vehicle after the particular period of time.

142. In combination,

a plurality of vehicles each responsive to an individual address provided to such vehicle and each operative in accordance with commands provided to such vehicle after the reception by such vehicle of such individual address,

5 a plurality of pads each operative to provide the addresses individual to such vehicles and to provide the commands for operating such vehicles,

a central station operatively coupled to the pads for receiving the addresses and the commands from the pads and for providing carrier signals at a particular frequency and for modulating the carrier signals in accordance with the addresses and commands from the pads,

10 means in the central station for transmitting the modulated carrier signals to the vehicles,

means in each of the vehicles for powering such vehicle upon the reception by the vehicle from the central station of carrier signals modulated with the address individual to such vehicle and the commands following such address,

15 means responsive in each of the vehicle to the address individual to such vehicle for operating the vehicle in accordance with the commands following such address, and

means responsive in each of the vehicles to the failure of such vehicle to receive carrier signals from the central station for depowering such vehicle.

143. In a combination as set forth in claim 142,

means in each of the vehicles for providing a first state of illumination in such vehicle with such vehicle powered and a second state of illumination in such vehicle with such vehicle depowered.

08797188-024197

144. In combination for use with a plurality of pads each operative to provide an address and commands and a central station for transmitting at a particular frequency a carrier signal modulated with the addresses and commands from the pads,

a vehicle,

5 means in the vehicle for receiving from the central station the carrier signals modulated with the address individual to such vehicle,

means for powering the vehicle in accordance with the reception by such vehicle of the modulated carrier signals individual to such vehicle,

10 means in the vehicle for demodulating the modulating carrier signals to recover the commands individual to such vehicle,

means for operating the vehicle in accordance with the commands recovered by such vehicle, and

means in the vehicle for depowering the vehicle upon the failure of the vehicle to receive carrier signals from the central station.

145. In a combination as set forth in claim 144,

the vehicle including wheels and an operating member different from the wheels,

5 the operating means being responsive to the demodulated commands for operating the wheels to move the vehicle, and for operating the member, in accordance with such demodulated commands.

146. In combination for use with a plurality of pads each operative to provide an address and commands and a central station for transmitting at a particular frequency a carrier signal modulated with the addresses and commands from the pads,

a vehicle,

means in the vehicle for receiving from the central station the carrier signals modulated with the address individual to such vehicle,

means for powering the vehicle in accordance with the reception by such vehicle of the modulated carrier signals individual to such vehicle,

10 means in the vehicle for demodulating the modulating carrier signals to recover the commands individual to such vehicle,

08707188-021107

Sub
C
5/5

Sub
C15
Concluded

the vehicle including wheels for moving the vehicle and including motors for rotating the wheels,

means in the receiver for providing pulse width modulations for energizing the motors in the vehicle to move the vehicle, the pulse width modulations providing progressive increments of time for energizing the motors to accelerate the vehicle, and

means in the receiver for progressively energizing the motors with the pulse width modulations for the progressive increments of time to accelerate the motors.

Sub
J12

147. In a combination as set forth in claim 146,
the vehicles being progressively energized with the pulse width modulations for the progressive increments of time from a zero time in the pulse width modulations to accelerate the motors in the vehicle.

Sub
C16

148. In combination,
a plurality of vehicles each responsive to an individual address provided to such vehicle and each operative in accordance with commands provided to such vehicle after the reception by such vehicle of such individual address,

5 a plurality of pads each operative to provide the addresses individual to such vehicles and to provide the commands for operating such vehicles,

10 a central station operatively coupled to the pads for receiving the addresses and the commands from the pads and for transmitting such addresses and commands to the vehicles in packets each composed of a plurality of binary indications representing the address and the commands for an individual one of the vehicles and each having start bits at the beginning of the packet and having the address following the start bits and having the commands following the address, the packets from the different pads in the plurality following one another with no time separation between successive ones of the packets,

15 means in the central station for transmitting the packets of the binary indications to the vehicles,

means in the vehicles for receiving the packets of the binary indications transmitted by the central station, and

02797188-021197

means responsive in each of the vehicles to the address individual to such vehicle for operating the vehicle in accordance with the commands following such address.

149. In a combination as set forth in claim 148,
each of the vehicles having wheels,
each of the vehicles having an operating member different from the wheels, and
each of the packets including first commands for rotating the wheels in an individual
5 one of the vehicles in accordance with the binary indications representing in such packet such individual one of the vehicles and including second commands for rotating the wheels in such individual one of the packets and including third commands for operating the member in such individual one of the packets,

means in each of the vehicles for rotating the wheels in such vehicle in accordance
10 with the first commands in the packets addressed to such vehicle, and

means in each of the vehicles for operating the operating member in such vehicle in accordance with the second commands in the packets addressed to such vehicle.

150. In combination,

a plurality of vehicles each responsive to an individual address for operation in accordance with commands provided to such vehicle,

5 a plurality of pads each operative to provide the addresses individual to such vehicles and to provide commands for operating such vehicles,

a central station operatively coupled to the pads for transmitting the addresses and commands from the pads to the vehicles,

a light indication in each of the vehicles, and

10 means in each of the vehicles for providing an illumination of the light in the vehicle when an individual one of the pads addresses the vehicle and before the vehicle receives the commands from such individual one of the pads.

151. In a combination as set forth in claim 150,

means in each vehicle for powering such vehicle when the individual one of the pads addresses such vehicle, and

08797188-021197

Side
-A4

5 means in each of the vehicles for depowering such vehicle when the vehicle fails to receive commands from any of the pads for a particular period of time.

add C17

08797188-021197